

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method for accessing a plurality of dynamic random access memory (DRAM) devices in parallel, each DRAM device having at least one memory bank, the method comprising:

determining a distribution of data segments of ~~the~~ a first data word and a second data word ~~words~~ in a plurality of memory banks, the plurality of memory banks being among the memory banks of the plurality of DRAM devices, wherein a first data segment of the first data word and a second data segment of the second data word are distributed to a same memory bank according to the distribution;

determining a sequence of retrieving the data segments ~~based on the plurality of memory banks,~~ the sequence of retrieving the first data segment and the second data segment determined by retrieval of other data segments from the same memory bank;

retrieving the data segments in parallel from the plurality of memory banks based on the distribution and the sequence; and

reassembling the retrieved data segments into the first and second data words.

2. (Currently Amended) The method of claim 1 further comprising:
receiving a retrieval request for the first data word and a retrieval request for the second data word, wherein the sequence of retrieving the first data segment

and the second data segment can be different from the order of the retrieval requests received.

3. (Previously Presented) The method of claim 1 wherein at least one of the first and second data words has a maximum word size.
4. (Previously Presented) The method of claim 1 wherein at least one of the first and second data words includes a cell of a packet.
5. (Previously Presented) The method of claim 1 wherein at least one of the first and second data words has a fixed word size.
6. (Previously Presented) The method of claim 1 wherein at least one of the first and second data words has a variable word size.
7. (Currently Amended) The method of claim 1, further comprising:
partitioning the first and second data words into the data segments; and
storing the data segments in parallel into the plurality of memory banks based on the distribution.[[.]]
8. (Currently Amended) The method of claim 1 wherein data segments of at least one of the first and second data words are stored in the plurality of memory banks

~~comprise~~ at least one memory bank from each of the plurality of DRAM devices
~~DRAM device.~~

9. (Previously Presented) The method of claim 1, wherein the sequence of retrieving the data segments within a first DRAM device is independent from the sequence of retrieving the data segments within a second DRAM device, the first and second DRAM devices being among the plurality of DRAM devices, the method further comprising:
scheduling the storing of the data segments independently within a DRAM device.
10. (Currently Amended) The method of claim 1 wherein retrieving the data segments in parallel ~~further~~ comprises:
determining a starting memory bank in each of the plurality of DRAM devices storing
at least one of the data segments; and
retrieving the data segments in parallel from the starting memory banks.
11. (Currently Amended) A system for providing fast access to dynamic random access memory (DRAM) devices, the system comprising:
a plurality of DRAM devices, each DRAM device having at least one memory bank;
a processor; and
a memory unit comprising a computer usable medium that comprises ~~includes~~
microcode for execution by the processor to cause the processor to perform
the operations of:

determining a distribution of data segments of the a first data word and a
second data word words in a plurality of memory banks, the plurality
of memory banks being among the memory banks of the plurality of
DRAM devices, wherein a first data segment of the first data word and
a second data segment of the second data word are distributed to a
same memory bank according to the distribution;
determining a sequence of retrieving the data segments ~~based on the plurality~~
~~of memory banks, the sequence of retrieving the first data segment and~~
the second data segment determined by retrieval of other data
segments from the same memory bank;
retrieving the data segments in parallel from the plurality of memory banks
based on the distribution and the sequence[.,,]; and
reassembling the retrieved data segments into the first and second data words.

12. (Currently Amended) The system of claim 11, wherein the computer usable medium further comprises microcode for execution by the processor to cause the processor to perform the operation of:
partitioning the first and second data words into the data segments; and
storing the data segments in parallel into the plurality of memory banks based on the distribution.

13. (Currently Amended) The method of claim 7, wherein storing the data segments in parallel into the plurality of memory banks based on the distribution further comprises:
- determining an in-bank burst length based upon a maximum word size, a total number of the plurality of memory banks, and a data width of an individual memory bank[[]]; and
- storing the data segments in parallel into the plurality of memory banks based on the distribution in a burst having the in-bank burst length.
14. (Previously Presented) The method of claim 1, wherein the data segments stored in the same memory bank are retrieved in one burst.
15. (Currently Amended) The method of claim 1, ~~wherein the sequence is determined by the load among the plurality of memory banks~~ further comprising:
- determining a storage sequence of storing the data segments, the storage sequence of storing the first data segment and the second data segment determined by storage of other data segments in the same memory bank, the storage sequence of storing the first data segment and the second data segment can be different from the sequence of retrieving the first data segment and the second data segment.
16. (Canceled)

17. (Currently Amended) A system for providing fast access to dynamic random access memory (DRAM) devices, the system comprising:

a plurality of DRAM devices, each DRAM device having at least one memory bank;

a storage distribution control module configured to partition a first data word and a

second data word into data segments and allocate, to determine a distribution of the data segments in a plurality of memory banks, the plurality of memory banks being among the memory banks of the plurality of DRAM devices, wherein a first data segment of the first data word and a second data segment of the second data word are distributed to a same memory bank according to the distribution;

a scheduler associated with each DRAM device, configured to determine a storage

schedule to store the data segments distributed ~~allocated~~ to the associated DRAM device in the plurality of memory banks ~~in the DRAM device~~, and to

determine a retrieval schedule to retrieve the data segments stored in the

associated DRAM device from the plurality of memory banks ~~in the~~

~~associated DRAM device based on the memory banks in the associated~~

~~DRAM device, the retrieval schedule of retrieving the first data segment and~~

~~the second data segment determined by retrieval of other data segments from~~

~~the same memory bank, the storage schedule and the retrieval schedule of one~~

~~DRAM device being independent of the storage schedules and retrieval~~

~~schedules of other DRAM devices schedulers; and~~

a retrieval control module configured to retrieve the data segments in parallel from

the plurality of memory banks ~~plurality of DRAM devices based on the~~

distribution and the retrieval schedule, and to reassemble the retrieved data segments into the first and second data words.